Amendments to the Claims

This listing of claims will replace all prior versions, and listings of claims in the application:

Listing of Claims:

Claim 1 (Currently Amended): A method for manufacturing a semiconductor device comprising:

a step of forming a groove for forming a device isolation part extending from a main surface of a semiconductor substrate to an intermediate depth of the semiconductor substrate;

a step of forming by wet oxidation a first thermal oxide film extending from over a bottom surface of the groove to an intermediate point on a sidewall of the groove, the intermediate point being at a depth within a range of 100 nm to 200 nm from the main surface of the semiconductor substrate; and

a step of forming by dry oxidation a second thermal oxide film extending from the intermediate point on the sidewall of the groove to over the main surface of the semiconductor substrate.

Claim 2 (Currently Amended): A method for manufacturing a semiconductor device according to claim 1, wherein the groove forming step comprises forming ~~is to form~~, by patterning, a mask exposing a region of the main surface corresponding to the groove

to be formed in the main surface, and thereafter a first etching is carried out using the mask on the semiconductor substrate, thereby forming the groove on the main surface of the semiconductor substrate;

the first thermal oxide film forming step including a step of forming by wet oxidation a pre-first thermal oxide film extending from over [[a]] the bottom surface of the groove to over a region of the main surface of the semiconductor substrate outside the groove, a step of forming an etching-resisting film covering the pre-first thermal oxide film at a bottom surface part of the groove, and a step of carrying out a second etching on the pre-first thermal oxide film by using the etching-resisting film and selectively removing the pre-first thermal oxide film in a part extending from the main surface of the semiconductor substrate to the intermediate point, ~~to make a~~ wherein a remaining part of the pre-first thermal oxide film ~~remained by removal into~~ is the first thermal oxide film; and

the second thermal oxide film forming step including a step of forming the second thermal oxide film extending from the intermediate point on the sidewall of the groove to over a main surface part of the semiconductor substrate outside the groove, while ~~remaining~~ the etching-resisting film remains as an antioxidation film.

Claim 3 (Currently Amended): A method for manufacturing a semiconductor device according to claim 2, wherein the etching-resisting film is formed extending from over [[a]] the bottom surface of the groove to over a region of the main surface outside the

groove and, prior to the second etching, the etching-resisting film is polished ~~in a manner exposing~~ to expose a surface of the pre-first thermal oxide film on the main surface.

Claim 4 (Currently Amended): A method for manufacturing a semiconductor device according to claim 1, further including a step of forming a protection film on the second thermal oxide film on the main surface of the semiconductor substrate outside the groove, a step of depositing an insulation film to fill ~~in a manner filling~~ the groove and ~~covering~~ cover the protection film, a step of polishing the insulation film ~~in a manner exposing~~ to expose a surface of the protection film, and a step of removing the protection film wherein a remaining ~~and making a~~ part of the insulation film ~~remained~~ in the groove ~~into a~~ is the device isolation part.

Claim 5 (Currently Amended): A method for manufacturing a semiconductor device, according to claim 1, wherein a heating temperature Tw (°C) of the semiconductor substrate [[in]] during the wet oxidation is in a range of from 700 to 1000 °C, a heating temperature Td (°C) of the semiconductor substrate [[in]] during the dry oxidation is in a range of from 800 to 1200 °C, and the wet oxidation and the dry oxidation [[is]] are carried out under a condition satisfying Tw (°C) < Td (°C).

Claim 6 (Original): A method for manufacturing a semiconductor device according to

claim 2, wherein the second etching is carried out by using an etching solution containing hydrogen fluoride acid.

Claim 7 (New): A method of manufacturing a semiconductor device comprising:

forming a groove in a surface of a semiconductor substrate;

forming a first thermal oxide on a bottom of the groove and extending up to an intermediate point on a sidewall of the groove, by wet oxidation;

forming a second thermal oxide on the surface of the semiconductor substrate and extending down to the intermediate point on the sidewall of the groove, by dry oxidation; and

forming an insulating film to entirely bury the groove, after said forming a first thermal oxide and said forming a second thermal oxide.

Claim 8 (New): The method of manufacturing a semiconductor device of claim 7, wherein the intermediate point is at a depth within a range of 100nm to 200nm from the surface of the semiconductor substrate.

Claim 9 (New): The method of manufacturing a semiconductor device of claim 7, wherein said forming a first thermal oxide comprises:

forming a preliminary thermal oxide layer covering the surface of the semiconductor substrate and within the groove, by wet oxidation;

forming an etch resistant film on the preliminary thermal oxide layer within the groove; and

etching the preliminary thermal oxide layer on the sidewall of the groove and covering the surface of the semiconductor substrate using the etch resistant film as a mask, whereby a remaining portion of the preliminary thermal oxide layer is the first thermal oxide.

Claim 10 (New): The method of manufacturing a semiconductor device of claim 9, wherein said forming a etch resistant film comprises:

forming an etch resistant material on an entirety of the preliminary thermal oxide layer; and

removing the etch resistant material over the surface of the semiconductor substrate, whereby a remaining portion of the etch resistant material on the preliminary thermal oxide layer within the groove is the etch resistant film.

Claim 11 (New): The method of manufacturing a semiconductor device of claim 10, wherein said removing the etch resistant film comprises chemical mechanical polishing.

Claim 12 (New): The method of manufacturing a semiconductor device of claim 9, wherein the etch resistant film is a silicon nitride.

Claim 13 (New): The method of manufacturing a semiconductor device of claim 7, wherein said forming an insulating film comprises:

forming a protection film on the second thermal oxide over the surface of the semiconductor substrate and not within the groove,

forming an insulating material on an entirety of the protection film and within the groove on the first and second thermal oxides to entirely bury the groove;

removing a portion of the insulating material using the protection film as a stopper film; and

removing the protection film, whereby a remaining portion of the insulating material is the insulating film.

Claim 14 (New): The method of manufacturing a semiconductor device of claim 13, wherein said removing a portion of the insulating material comprises chemical mechanical polishing.

Claim 15 (New): The method of manufacturing a semiconductor device of claim 13, wherein the protection film is a silicon nitride.